

AMENDMENTS TO THE CLAIMS

1. (Currently amended) A transmit power control method in a Code Division Multiple Access (CDMA) mobile communication system comprising:

a checking step of checking whether one or more base transceiver stations (BTSs) are connected;

a calculating step of, when a result of the checking step shows that two or more BTSs are connected, selecting CH receive SIRs (Signal to Interference Ratios) corresponding to the connected BTSs, and making a calculation by using the selected values;

a reference value changing step of changing a value of a reference value S_{ref} according to a result of the calculation;

an upper limit setting step of, when the result of the checking step shows that only one BTS is connected, setting the reference value S_{ref} to an upper limit; and

a reporting step of reporting the changed reference value S_{ref} to all the connected BTSs in each of the steps,

wherein it is possible to decide the reference value S_{ref} in response to a variation in a selection/synthesis gain due to an increase or a decrease of the number of connected BTSs.

2. (Currently amended) A transmit power control method in a CDMA mobile communication system according to claim 1, wherein the CH receive SIR ~~is any~~ comprises one of a Perch CH receive SIR and a communication CH receive SIR for each of the connected BTSs.

3. (Currently amended) A transmit power control method in a Code Division Multiple Access (CDMA) mobile communication system comprising:

a checking step of checking whether one or more base transceiver stations (BTSs) are connected;

a calculating step of, when a result of the checking step shows that two or more BTSs are connected, selecting CH receive SIRs (Signal to Interference Ratios) corresponding to the connected BTSs, and making a calculation by using the selected values;

a reference value changing step of changing a value of a reference value S_{ref} according to a result of calculation;

an upper limit setting step of, when the result of the checking step shows that only one BTS is connected, setting the reference value S_{ref} to an upper limit; and

a reporting step of reporting the changed reference value S_{ref} to all the connected BTSs in each of the steps, wherein it is possible to decide the reference value S_{ref} in response to a variation in selection/synthesis gain due to an increase or a decrease of the number of connected ~~BTSs~~; BTSs, wherein:

said CH receive SIR ~~is any~~ comprises one of a Perch CH receive SIR and a communication CH receive SIR for each of the connected ~~BTSs~~; BTSs,

said ~~the~~ calculation made by using the selected value in the calculating step comprises:

~~any one of the step of selecting the~~ a maximum value S_{max} and ~~the~~ a second largest value S_{scd} from among the CH receive SIRs corresponding to the connected BTSs and ~~the step of selecting the~~ maximum value S_{max} from among the CH

receive SIRs corresponding to the connected BTSs; and

~~any one of the step~~ of calculating a difference (X) between the Smax and the Sscd and ~~the step of calculating the a~~ number (Nbts) of BTSs in which a difference between the Smax and the receive SIR becomes a predetermined value T2 or less.

4. (Currently amended) A transmit power control method in a CDMA mobile communication system according to claim 3, wherein, when the difference X is equal to a predetermined threshold value T1 or more, it is decided that only a small gain can be obtained by selection/synthesis, thereby setting the reference value Sref to an upper limit irrespective of results of the steps.

5. (Currently amended) A transmit power control method in a CDMA mobile communication system according to claim 3, wherein, when the difference X is equal to a predetermined threshold value T1 or less, it is decided that a sufficient gain can be obtained by selection/synthesis, thereby setting the reference value Sref to a value according to the difference X.

6. (Currently amended) A transmit power control method in a CDMA mobile communication system according to claim 3, wherein the reference value Sref is found by the following expression:

$$Sref = Sref0 - (T1 - X) \times \alpha$$

where α is a desired constant,

T1 is a predetermined threshold value, and

Sref0 is an upper limit.

7. (Currently amended) A transmit power control method in a Code Division Multiple Access (CDMA) mobile communication system, said method comprising:

a checking step of checking whether one or more base transceiver stations (BTSs) are connected;

a calculating step of, when a result of the checking step shows that two or more BTSs are connected, selecting CH receive SIRs (Signal to Interference Ratios) corresponding to the connected BTSs, and making a calculation by using the selected values;

a reference value changing step of changing a value of a reference value S_{ref} according to a result of the calculation;

an upper limit setting step of, when the result of the checking step shows that only one BTS is connected, setting the reference value S_{ref} to an upper limit; and

a reporting step of reporting the changed reference value S_{ref} to all the connected BTSs in each of the steps, wherein it is possible to decide the reference value S_{ref} in response to a variation in a selection/synthesis gain due to an increase or a decrease of the number of connected ~~BTSs~~; BTSs, wherein:

said CH receive SIR ~~is any~~ comprises one of a Perch CH receive SIR and a communication CH receive SIR for each of the connected ~~BTSs~~; BTSs,

said ~~the~~ calculation made by using the selected value in the calculating step comprises:

~~any one of the step of selecting the~~ a maximum value S_{max} and ~~the~~ a second largest value S_{scd} from among the CH receive SIRs corresponding to the connected BTSs and ~~the step of selecting the~~ maximum value S_{max} from among the CH

receive SIRs corresponding to the connected BTSs; and

~~any one of the step of~~ calculating a difference (X) between the Smax and the Sscd and ~~the step of~~ calculating the a number (Nbts) of BTSs in which a difference between the Smax and the receive SIR becomes a predetermined value T2 or less, and

said reference value changing step ~~is any~~ comprises one of ~~the step of~~ changing the reference value Sref to a value according to the difference (X) and ~~the step of~~ changing the reference value Sref to a value according to the number (Nbts).

8. (Currently amended) A transmit power control method in a CDMA mobile communication system according to claim 7, wherein, when the difference X is equal to a predetermined threshold value T1 or more, it is decided that only a small gain can be obtained by selection/synthesis, thereby setting the reference value Sref to an upper limit irrespective of results of the steps.

9. (Currently amended) A transmit power control method in a CDMA mobile communication system according to claim 7, wherein, when the difference X is equal to a predetermined threshold value T1 or less, it is decided that a sufficient gain can be obtained by selection/synthesis, thereby setting the reference value Sref to a value according to the difference X.

10. (Currently amended) A transmit power control method in a CDMA mobile communication system according to claim 7, wherein the reference value Sref is found by the following expression:

$$Sref = Sref0 - (T1 - X) \times \alpha$$

where α is a desired constant,

T1 is a predetermined threshold value, and

Sref0 is an upper limit.

11. (New) A transmit power control method in a Code Division Multiple Access (CDMA) mobile communication system, said method comprising, in a radio network controller (RNC) interconnected to a plurality of Base Transceiver Stations (BTSs):

selecting CH receive SIRs (Signal to Interference Ratios) corresponding to BTSs connected to a Mobile Station (MS);

calculating a selection/synthesis gain from said selected SIRs; and

using said selection/synthesis gain to calculate a reference value Sref for an outer loop control of said transmit power.

12. (New) The transmit power control method of claim 11, further comprising:

transmitting said reference value Sref to all BTSs connected to said MS.

13. (New) The transmit power control method of claim 11, further comprising:

prior to said selecting CH receive SIRs, determining whether more than one BTS is connected to said MS.

14. (New) The transmit power control method of claim 11, wherein

said calculating said selection/synthesis gain comprises calculating a difference X between a maximum value Smax and a second largest value Sscd from among the CH receive SIRs, and

said reference value S_{ref} is calculated by:

determining whether said difference X exceeds a predetermined threshold.

15. (New) The transmit power control method of claim 14, the calculation for said reference value S_{ref} further comprising:

if said threshold is exceeded, setting S_{ref} to an upper limit.

16. (New) The transmit power control method of claim 15, the calculation for said reference value S_{ref} further comprising:

if said threshold is not exceeded, changing S_{ref} as a function of said difference X .

17. (New) The transmit power control method of claim 11, wherein

said calculating said selection/synthesis gain comprises determining a maximum value S_{max} and determining a number of connected BTSs (N_{bts}) for which a difference between said maximum value S_{max} and the receive SIR becomes equal to a predetermined threshold value or less, and

said reference value S_{ref} is calculated by:

if $N_{bts} \leq 1$, setting S_{ref} to an upper limit; and

if $N_{bts} \geq 2$, changing S_{ref} as a function of N_{bts} .

18. (New) The transmit power control method of claim 11, wherein

said calculating said selection/synthesis gain comprises calculating a difference X between a maximum value S_{max} and a second largest value S_{scd} from among the CH

receive SIRs, and

said reference value S_{ref} is calculated by a function of N_{bts} and X .

19. (New) The transmit power control method of claim 11, wherein

said calculating said selection/synthesis gain comprises calculating a difference X between a maximum value S_{max} and a second largest value S_{scd} from among the CH receive SIRs, and

said reference value S_{ref} is calculated by a function of N_{bts} and X .

20. (New) An apparatus serving as a radio network controller (RNC) in a Code Division Multiple Access (CDMA) mobile communication system, said apparatus comprising:

a Perch CH receive quality observing portion to receive SIRs (Signal to Interference Ratios) from all Base Transceiver Stations (BTSS) connected to a Mobile Station (MS); and

a selection/synthesis processing portion to select ones of said SIRs to calculate a selection/synthesis gain.

21. (New) The apparatus of claim 20, wherein said selection/synthesis process portion further uses said selection/synthesis gain to calculate a reference value S_{ref} for an outer loop control of a transmit power for said CDMA system.

22. (New) The method of claim 1, wherein the decision for said reference value S_{ref} includes an evaluation of a degree of contribution of each said connected BTS.

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23. (New) The method of claim 1, wherein the decision for said reference value S_{ref} includes determining whether the selection/synthesis gain can be obtained by checking whether a difference of said SIRs received at said BTSs is small.